

**Work Order ID 154272****\*154272\***

Page 1

Wednesday, December 07, 2016 11:08:19 A

Item ID: 644.4120

Accept

**\*N900040100\***

Setup Start

**\*NS1\***

Revision ID:

Stop

**\*NS2\***

Item Name: Spacer, Crosstube

Start Date: 12/23/2016 Start Qty: 7.00

**\*7\***

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00

**\*7\***

Customer:

Reference:

Approvals:

Process Plan:

DAS

21

Date: DEC 07 2016

Tooling:

Date:

Run Start

**\*NR1\***

QC:

9-89

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Draw Nbr

Revision Nbr

644.4100

REV F2

110

0.00

**\*110\***

Lathe Conv

Memo

0.15

Conventional Lathe

1-TURN AS PER DWG  
DWG REV: F

2- deburr and break all sharp edges

120

QC2- Inspect parts off machine FAI/FAIB

0.00

**\*120\***

QC

Memo

0.10

Quality Control

DAS  
32  
9-89

16-12-13

DAS  
32  
9-89

16-12-13

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                                            |                                                 |                                               |            |  |  |                |  |  |                                      |                                             |                                          |                                           |                                           |                                           |                                 |                                   |                                  |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                                             |                                            |                                   |                                          |                                |                                        |                                          |                                     |                                             |                                           |                                   |                                      |                                  |                                  |                                           |                                  |                                     |                                        |                                     |                                 |                              |                                              |                                             |                                                          |                                       |                                  |                                     |                                              |                                        |                                      |                                                |                                           |                                           |                                                |               |  |  |  |                                        |                                   |
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| <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: left;">Root Cause</th> <th colspan="3" style="text-align: left;">FAULT CATEGORY</th> </tr> </thead> <tbody> <tr> <td>Environment <input type="checkbox"/></td> <td>No Re-verification <input type="checkbox"/></td> <td>Pressure/Forced <input type="checkbox"/></td> <td>Temperature/Cure <input type="checkbox"/></td> <td>Power Loss/Surge <input type="checkbox"/></td> <td>Positioned Wrong <input type="checkbox"/></td> </tr> <tr> <td>Design <input type="checkbox"/></td> <td>Operator <input type="checkbox"/></td> <td>Bending <input type="checkbox"/></td> <td>Set-up <input type="checkbox"/></td> <td>Folio/Program <input type="checkbox"/></td> <td>Outside Dimensions <input type="checkbox"/></td> </tr> <tr> <td>Doc/Data <input type="checkbox"/></td> <td>Offset/Setup <input type="checkbox"/></td> <td>Centre Not Concentric <input type="checkbox"/></td> <td>BOM/Route <input type="checkbox"/></td> <td>Grain <input type="checkbox"/></td> <td>Over/Under tolerance <input type="checkbox"/></td> </tr> <tr> <td>Equip/Tooling <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td>Cracks <input type="checkbox"/></td> <td>Broken/Damage/Defect <input type="checkbox"/></td> <td>Weld <input type="checkbox"/></td> <td>Part Incorrect <input type="checkbox"/></td> </tr> <tr> <td>Handling/Pre <input type="checkbox"/></td> <td>Training <input type="checkbox"/></td> <td>Crimp/Kink/Ripple/Wave <input type="checkbox"/></td> <td>Inspection Incomplete/Unqualified <input type="checkbox"/></td> <td>Wrong Stock Pulled <input type="checkbox"/></td> <td>Part Lost/Missing <input type="checkbox"/></td> </tr> <tr> <td>Material <input type="checkbox"/></td> <td>Use for Testing <input type="checkbox"/></td> <td>Cuffs <input type="checkbox"/></td> <td>Contamination <input type="checkbox"/></td> <td>Out of Sequence <input type="checkbox"/></td> <td>Part Moved <input type="checkbox"/></td> </tr> <tr> <td>Internal Transport <input type="checkbox"/></td> <td>Poor Information <input type="checkbox"/></td> <td>Crushing <input type="checkbox"/></td> <td>Countersink <input type="checkbox"/></td> <td>Off-set <input type="checkbox"/></td> <td>Drawing <input type="checkbox"/></td> </tr> <tr> <td>Tribal Knowledge <input type="checkbox"/></td> <td>Rushing <input type="checkbox"/></td> <td>Heat Treat <input type="checkbox"/></td> <td>Cut Too Short <input type="checkbox"/></td> <td>Mislabeled <input type="checkbox"/></td> <td>Finish <input type="checkbox"/></td> </tr> <tr> <td>LOA <input type="checkbox"/></td> <td>Product Improvement <input type="checkbox"/></td> <td>Wave/Twist in Tube <input type="checkbox"/></td> <td>Instructions Incomplete/Unclear <input type="checkbox"/></td> <td>Fit/Function <input type="checkbox"/></td> <td>Misread <input type="checkbox"/></td> </tr> <tr> <td>Substation <input type="checkbox"/></td> <td>Process Improvement <input type="checkbox"/></td> <td>Marks/Chatter <input type="checkbox"/></td> <td>Drill Holes <input type="checkbox"/></td> <td>Misaligned/off center <input type="checkbox"/></td> <td>Turning Sequence <input type="checkbox"/></td> </tr> <tr> <td>Past Expiry Date <input type="checkbox"/></td> <td>Manufacturing Process <input type="checkbox"/></td> <td colspan="4" rowspan="2" style="text-align: center; vertical-align: top;">OTHER : _____</td> </tr> <tr> <td>Misidentified <input type="checkbox"/></td> <td>Past Due <input type="checkbox"/></td> </tr> </tbody> </table> |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                 |                                               | Root Cause |  |  | FAULT CATEGORY |  |  | Environment <input type="checkbox"/> | No Re-verification <input type="checkbox"/> | Pressure/Forced <input type="checkbox"/> | Temperature/Cure <input type="checkbox"/> | Power Loss/Surge <input type="checkbox"/> | Positioned Wrong <input type="checkbox"/> | Design <input type="checkbox"/> | Operator <input type="checkbox"/> | Bending <input type="checkbox"/> | Set-up <input type="checkbox"/> | Folio/Program <input type="checkbox"/> | Outside Dimensions <input type="checkbox"/> | Doc/Data <input type="checkbox"/> | Offset/Setup <input type="checkbox"/> | Centre Not Concentric <input type="checkbox"/> | BOM/Route <input type="checkbox"/> | Grain <input type="checkbox"/> | Over/Under tolerance <input type="checkbox"/> | Equip/Tooling <input type="checkbox"/> | Supplier <input type="checkbox"/> | Cracks <input type="checkbox"/> | Broken/Damage/Defect <input type="checkbox"/> | Weld <input type="checkbox"/> | Part Incorrect <input type="checkbox"/> | Handling/Pre <input type="checkbox"/> | Training <input type="checkbox"/> | Crimp/Kink/Ripple/Wave <input type="checkbox"/> | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/> | Part Lost/Missing <input type="checkbox"/> | Material <input type="checkbox"/> | Use for Testing <input type="checkbox"/> | Cuffs <input type="checkbox"/> | Contamination <input type="checkbox"/> | Out of Sequence <input type="checkbox"/> | Part Moved <input type="checkbox"/> | Internal Transport <input type="checkbox"/> | Poor Information <input type="checkbox"/> | Crushing <input type="checkbox"/> | Countersink <input type="checkbox"/> | Off-set <input type="checkbox"/> | Drawing <input type="checkbox"/> | Tribal Knowledge <input type="checkbox"/> | Rushing <input type="checkbox"/> | Heat Treat <input type="checkbox"/> | Cut Too Short <input type="checkbox"/> | Mislabeled <input type="checkbox"/> | Finish <input type="checkbox"/> | LOA <input type="checkbox"/> | Product Improvement <input type="checkbox"/> | Wave/Twist in Tube <input type="checkbox"/> | Instructions Incomplete/Unclear <input type="checkbox"/> | Fit/Function <input type="checkbox"/> | Misread <input type="checkbox"/> | Substation <input type="checkbox"/> | Process Improvement <input type="checkbox"/> | Marks/Chatter <input type="checkbox"/> | Drill Holes <input type="checkbox"/> | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/> | Past Expiry Date <input type="checkbox"/> | Manufacturing Process <input type="checkbox"/> | OTHER : _____ |  |  |  | Misidentified <input type="checkbox"/> | Past Due <input type="checkbox"/> |
| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| Environment <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| Design <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Doc/Data <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| Equip/Tooling <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Handling/Pre <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>     | Part Lost/Missing <input type="checkbox"/>    |            |  |  |                |  |  |                                      |                                             |                                          |                                           |                                           |                                           |                                 |                                   |                                  |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                    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| Material <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>        | Part Moved <input type="checkbox"/>           |            |  |  |                |  |  |                                      |                                             |                                          |                                           |                                           |                                           |                                 |                                   |                                  |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                    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| Internal Transport <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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   |                                           |                                           |                                 |                                   |                                  |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                    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| Tribal Knowledge <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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   |                                           |                                           |                                 |                                   |                                  |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                    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| LOA <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| Substation <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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   |                                           |                                           |                                 |                                   |                                  |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                    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| Past Expiry Date <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Misidentified <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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### Packaging

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DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                              |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Step #:                                                                                                                                                                            | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | MRB (QSI042) Approval                        |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                    | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                              |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | Lead hand / Supervisor Approval Verification |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | QC / QA Coordinator Approval                 |  |
| <b>Root Cause</b><br><div style="display: flex; justify-content: space-between;"> <div>           Environment <input type="checkbox"/><br/>           Design <input type="checkbox"/><br/>           Doc/Data <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Pre <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Internal Transport <input type="checkbox"/><br/>           Tribal Knowledge <input type="checkbox"/><br/>           LOA <input type="checkbox"/><br/>           Substation <input type="checkbox"/><br/>           Past Expiry Date <input type="checkbox"/><br/>           Misidentified <input type="checkbox"/> </div> <div>           No Re-verification <input type="checkbox"/><br/>           Operator <input type="checkbox"/><br/>           Offset/Setup <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Training <input type="checkbox"/><br/>           Use for Testing <input type="checkbox"/><br/>           Poor Information <input type="checkbox"/><br/>           Rushing <input type="checkbox"/><br/>           Product Improvement <input type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Past Due <input type="checkbox"/> </div> </div> |                                                                                                                                                                                    | <b>FAULT CATEGORY</b><br><div style="display: flex; justify-content: space-between;"> <div>           Pressure/Forced <input type="checkbox"/><br/>           Bending <input type="checkbox"/><br/>           Centre Not Concentric <input type="checkbox"/><br/>           Cracks <input type="checkbox"/><br/>           Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>           Cuffs <input type="checkbox"/><br/>           Crushing <input type="checkbox"/><br/>           Heat Treat <input type="checkbox"/><br/>           Wave/Twist in Tube <input type="checkbox"/><br/>           Marks/Chatter <input type="checkbox"/> </div> <div>           Temperature/Cure <input type="checkbox"/><br/>           Set-up <input type="checkbox"/><br/>           BOM/Route <input type="checkbox"/><br/>           Broken/Damage/Defect <input type="checkbox"/><br/>           Inspection Incomplete/Unqualified <input type="checkbox"/><br/>           Contamination <input type="checkbox"/><br/>           Countersink <input type="checkbox"/><br/>           Cut Too Short <input type="checkbox"/><br/>           Instructions Incomplete/Unclear <input type="checkbox"/><br/>           Drill Holes <input type="checkbox"/> </div> <div>           Power Loss/Surge <input type="checkbox"/><br/>           Folio/Program <input type="checkbox"/><br/>           Grain <input type="checkbox"/><br/>           Weld <input type="checkbox"/><br/>           Wrong Stock Pulled <input type="checkbox"/><br/>           Out of Sequence <input type="checkbox"/><br/>           Off-set <input type="checkbox"/><br/>           Mislabeled <input type="checkbox"/><br/>           Fit/Function <input type="checkbox"/><br/>           Misaligned/off center <input type="checkbox"/> </div> <div>           Positioned Wrong <input type="checkbox"/><br/>           Outside Dimensions <input type="checkbox"/><br/>           Over/Under tolerance <input type="checkbox"/><br/>           Part Incorrect <input type="checkbox"/><br/>           Part Lost/Missing <input type="checkbox"/><br/>           Part Moved <input type="checkbox"/><br/>           Drawing <input type="checkbox"/><br/>           Finish <input type="checkbox"/><br/>           Misread <input type="checkbox"/><br/>           Turning Sequence <input type="checkbox"/> </div> </div> |  |                                              |  |
| OTHER : <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                              |  |



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| Sequence ID/<br>Work Center ID | Operation<br>Description                      | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|-----------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 155                            | QC5- Inspect part completeness to step on W/O | 0.00                 |         |        |              |               |               |                  | DAS            |
| <b>*155*</b>                   |                                               |                      |         |        |              |               |               |                  | 9              |
| QC                             |                                               |                      |         |        |              |               |               |                  | 9-89           |
| Quality Control                | Memo                                          | 0.02                 |         |        |              |               |               |                  |                |
| 160                            |                                               | 0.00                 |         |        |              |               |               |                  |                |
| <b>*160*</b>                   |                                               |                      |         |        |              |               |               |                  |                |
| SprayPaint                     |                                               |                      |         |        |              |               |               |                  |                |
| Spray Painting                 | Memo                                          | 0.00                 |         |        |              |               |               |                  |                |
|                                | PRIME AS PER DWG AND NOTE 4<br>BATCH: 136429  |                      |         |        |              |               |               |                  |                |
|                                | PAINT AS PER DWG AND NOTE 4<br>BATCH: 136434  |                      |         |        |              |               |               |                  |                |
| 165                            | QC14- Inspect Spray Paint                     | 0.00                 |         |        |              |               |               |                  | DAS            |
| <b>*165*</b>                   |                                               |                      |         |        |              |               |               |                  | 38             |
| QC                             |                                               |                      |         |        |              |               |               |                  | 3-89           |
| Quality Control                | Memo                                          | 0.00                 |         |        |              |               |               |                  |                |

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                                            |                                                |                                               |
| Date :                                                       | Step #:                                                                                                                                                                            | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | MRB (QSI042) Approval                          |                                               |
| Description Work Order Deviation                             |                                                                                                                                                                                    | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |                                                |                                               |
|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | Completed By                                   |                                               |
|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | Lead hand / Supervisor Approval Verification   |                                               |
|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | QC / QA Coordinator Approval                   |                                               |
| Root Cause                                                   |                                                                                                                                                                                    | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                            |                                                |                                               |
| Environment <input type="checkbox"/>                         | No Re-verification <input type="checkbox"/>                                                                                                                                        | Pressure/Forced <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Temperature/Cure <input type="checkbox"/>                  | Power Loss/Surge <input type="checkbox"/>      | Positioned Wrong <input type="checkbox"/>     |
| Design <input type="checkbox"/>                              | Operator <input type="checkbox"/>                                                                                                                                                  | Bending <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Set-up <input type="checkbox"/>                            | Folio/Program <input type="checkbox"/>         | Outside Dimensions <input type="checkbox"/>   |
| Doc/Data <input type="checkbox"/>                            | Offset/Setup <input type="checkbox"/>                                                                                                                                              | Centre Not Concentric <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                 | Over/Under tolerance <input type="checkbox"/> |
| Equip/Tooling <input type="checkbox"/>                       | Supplier <input type="checkbox"/>                                                                                                                                                  | Cracks <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Broken/Damage/Defect <input type="checkbox"/>              | Weld <input type="checkbox"/>                  | Part Incorrect <input type="checkbox"/>       |
| Handling/Pre <input type="checkbox"/>                        | Training <input type="checkbox"/>                                                                                                                                                  | Crimp/Kink/Ripple/Wave <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>    | Part Lost/Missing <input type="checkbox"/>    |
| Material <input type="checkbox"/>                            | Use for Testing <input type="checkbox"/>                                                                                                                                           | Cuffs <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>       | Part Moved <input type="checkbox"/>           |
| Internal Transport <input type="checkbox"/>                  | Poor Information <input type="checkbox"/>                                                                                                                                          | Crushing <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Countersink <input type="checkbox"/>                       | Off-set <input type="checkbox"/>               | Drawing <input type="checkbox"/>              |
| Tribal Knowledge <input type="checkbox"/>                    | Rushing <input type="checkbox"/>                                                                                                                                                   | Heat Treat <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cut Too Short <input type="checkbox"/>                     | Mislabeled <input type="checkbox"/>            | Finish <input type="checkbox"/>               |
| LOA <input type="checkbox"/>                                 | Product Improvement <input type="checkbox"/>                                                                                                                                       | Wave/Twist in Tube <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Instructions Incomplete/Unclear <input type="checkbox"/>   | Fit/Function <input type="checkbox"/>          | Misread <input type="checkbox"/>              |
| Substation <input type="checkbox"/>                          | Process Improvement <input type="checkbox"/>                                                                                                                                       | Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/>     |
| Past Expiry Date <input type="checkbox"/>                    | Manufacturing Process <input type="checkbox"/>                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                |                                               |
| Misidentified <input type="checkbox"/>                       | Past Due <input type="checkbox"/>                                                                                                                                                  | OTHER : <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                            |                                                |                                               |

**Work Order ID 154272**

Wednesday, December 07, 2016 11:08:19 A

**\*154272\***

Page 4

Item ID: 644.4120

Accept

**\*N900040100\***

Setup Start

**\*NS1\***

Revision ID:

Stop

**\*NS2\***

Item Name: Spacer, Crosstube

Start Date: 12/23/2016 Start Qty: 7.00

**\*7\***

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00

**\*7\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

180

Identify as per dwg & Stock Location: CK131

0.00

**\*180\***

Packaging

Memo

0.01

Packaging

\*\*\*IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV\*\*\*

7

DAS  
6  
9-89

FEB 01 2017

190

QC21- Final Inspection - Work Order Release

0.00

**\*190\***

QC

Memo

0.12

Quality Control

17/02/02



FEB 02 2017



DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                      | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MRB (QSI042) Approval                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Completed By                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Lead hand / Supervisor<br>Approval Verification                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | QC / QA Coordinator<br>Approval                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Environment <input type="checkbox"/><br>Design <input type="checkbox"/><br>Doc/Data <input type="checkbox"/><br>Equip/Tooling <input type="checkbox"/><br>Handling/Pre <input type="checkbox"/><br>Material <input type="checkbox"/><br>Internal Transport <input type="checkbox"/><br>Tribal Knowledge <input type="checkbox"/><br>LOA <input type="checkbox"/><br>Substation <input type="checkbox"/><br>Past Expiry Date <input type="checkbox"/><br>Misidentified <input type="checkbox"/> | No Re-verification <input type="checkbox"/><br>Operator <input type="checkbox"/><br>Offset/Setup <input type="checkbox"/><br>Supplier <input type="checkbox"/><br>Training <input type="checkbox"/><br>Use for Testing <input type="checkbox"/><br>Poor Information <input type="checkbox"/><br>Rushing <input type="checkbox"/><br>Product Improvement <input type="checkbox"/><br>Process Improvement <input type="checkbox"/><br>Manufacturing Process <input type="checkbox"/><br>Past Due <input type="checkbox"/> | Pressure/Forced <input type="checkbox"/><br>Bending <input type="checkbox"/><br>Centre Not Concentric <input type="checkbox"/><br>Cracks <input type="checkbox"/><br>Crimp/Kink/Ripple/Wave <input type="checkbox"/><br>Cuffs <input type="checkbox"/><br>Crushing <input type="checkbox"/><br>Heat Treat <input type="checkbox"/><br>Wave/Twist in Tube <input type="checkbox"/><br>Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Temperature/Cure <input type="checkbox"/><br>Set-up <input type="checkbox"/><br>BOM/Route <input type="checkbox"/><br>Broken/Damage/Defect <input type="checkbox"/><br>Inspection Incomplete/Unqualified <input type="checkbox"/><br>Contamination <input type="checkbox"/><br>Countersink <input type="checkbox"/><br>Cut Too Short <input type="checkbox"/><br>Instructions Incomplete/Unclear <input type="checkbox"/><br>Drill Holes <input type="checkbox"/> | Power Loss/Surge <input type="checkbox"/><br>Folio/Program <input type="checkbox"/><br>Grain <input type="checkbox"/><br>Weld <input type="checkbox"/><br>Wrong Stock Pulled <input type="checkbox"/><br>Out of Sequence <input type="checkbox"/><br>Off-set <input type="checkbox"/><br>Mislabeled <input type="checkbox"/><br>Fit/Function <input type="checkbox"/><br>Misaligned/off center <input type="checkbox"/> | Positioned Wrong <input type="checkbox"/><br>Outside Dimensions <input type="checkbox"/><br>Over/Under tolerance <input type="checkbox"/><br>Part Incorrect <input type="checkbox"/><br>Part Lost/Missing <input type="checkbox"/><br>Part Moved <input type="checkbox"/><br>Drawing <input type="checkbox"/><br>Finish <input type="checkbox"/><br>Misread <input type="checkbox"/><br>Turning Sequence <input type="checkbox"/> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | OTHER :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                   |

# Picklist Print

Wednesday, December 07, 2016 11:08:23 AM

Page 1

Work Order ID: 154272

**\*154272\***

Parent Item: 644.4120

**\*644 4120\***

Parent Item Name: Spacer, Crosstube

Start Date: 12/23/2016

Required Date: 12/23/2016

Start Qty: 7.00

Required Qty: 7.00

Comments: IPP REV:A NEW ISSUE 16.12.06 JLM VERIFIED BVY:DD

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status            |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|-------------------|
| M6061T6R0.750                   |                        | Purchased     |             |                     | No               |                 | f                  | 53.7600        |             | 2.173684     |               |                |                   |
| <b>*M6061T6R0 750*</b>          |                        |               |             |                     |                  |                 |                    |                |             |              |               | 16-12-13       | DAS<br>32<br>9-89 |
| 6061-T6 Round Bar .750"         |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |                   |

Location

Loc Qty

Loc Code

MAT012

53.76

m135377

0.6

m135612

5.16

m135861

24

m136327

24

3.438'

1.615'

1.823'

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                |                                               |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                                            |                                                |                                               |
| Date :                                                       | Step #:                                                                                                                                                                            | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | MRB (QSI042) Approval                          |                                               |
| Description Work Order Deviation                             |                                                                                                                                                                                    | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            | Completed By                                   |                                               |
|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | Lead hand / Supervisor Approval Verification   |                                               |
|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            | QC / QA Coordinator Approval                   |                                               |
| Root Cause                                                   |                                                                                                                                                                                    | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                            |                                                |                                               |
| Environment <input type="checkbox"/>                         | No Re-verification <input type="checkbox"/>                                                                                                                                        | Pressure/Forced <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Temperature/Cure <input type="checkbox"/>                  | Power Loss/Surge <input type="checkbox"/>      | Positioned Wrong <input type="checkbox"/>     |
| Design <input type="checkbox"/>                              | Operator <input type="checkbox"/>                                                                                                                                                  | Bending <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Set-up <input type="checkbox"/>                            | Folio/Program <input type="checkbox"/>         | Outside Dimensions <input type="checkbox"/>   |
| Doc/Data <input type="checkbox"/>                            | Offset/Setup <input type="checkbox"/>                                                                                                                                              | Centre Not Concentric <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                 | Over/Under tolerance <input type="checkbox"/> |
| Equip/Tooling <input type="checkbox"/>                       | Supplier <input type="checkbox"/>                                                                                                                                                  | Cracks <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Broken/Damage/Defect <input type="checkbox"/>              | Weld <input type="checkbox"/>                  | Part Incorrect <input type="checkbox"/>       |
| Handling/Pre <input type="checkbox"/>                        | Training <input type="checkbox"/>                                                                                                                                                  | Crimp/Kink/Ripple/Wave <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>    | Part Lost/Missing <input type="checkbox"/>    |
| Material <input type="checkbox"/>                            | Use for Testing <input type="checkbox"/>                                                                                                                                           | Cuffs <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>       | Part Moved <input type="checkbox"/>           |
| Internal Transport <input type="checkbox"/>                  | Poor Information <input type="checkbox"/>                                                                                                                                          | Crushing <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Countersink <input type="checkbox"/>                       | Off-set <input type="checkbox"/>               | Drawing <input type="checkbox"/>              |
| Tribal Knowledge <input type="checkbox"/>                    | Rushing <input type="checkbox"/>                                                                                                                                                   | Heat Treat <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cut Too Short <input type="checkbox"/>                     | Mislabeled <input type="checkbox"/>            | Finish <input type="checkbox"/>               |
| LOA <input type="checkbox"/>                                 | Product Improvement <input type="checkbox"/>                                                                                                                                       | Wave/Twist in Tube <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Instructions Incomplete/Unclear <input type="checkbox"/>   | Fit/Function <input type="checkbox"/>          | Misread <input type="checkbox"/>              |
| Substation <input type="checkbox"/>                          | Process Improvement <input type="checkbox"/>                                                                                                                                       | Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/>     |
| Past Expiry Date <input type="checkbox"/>                    | Manufacturing Process <input type="checkbox"/>                                                                                                                                     | OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                                |                                               |
| Misidentified <input type="checkbox"/>                       | Past Due <input type="checkbox"/>                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                |                                               |





# APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 04489

SHEET 1 OF 1

DWG NO. 644.4100

REV: F

PREPARED BY: J. BECKER

DATE: 04/08/14

EFFECT ON DWG  
☐ INC. ☒ UNINC.

DWG TITLE: PIVOT STEP ASSY

APPROVED BY:

ENGR

MFG

QC

EFF:

NEXT ORDER

TRANSACTION  
A-ADD  
R-REVISE

CODES (TC)  
C-CREATE  
D-DELETE

REASON: UPDATE NOTE 4, FINISH SPECIFICATION.

## NOTES

IDENTIFY ALL PARTS IN ACCORDANCE WITH MPP-120

MATERIAL: 2024-T3 ALUMINUM

MATERIAL: 6061-T6 ALUMINUM

FINISH IAW MPP-172 SECTION 2.1, SECTION 3.1, SECTION 4.1, SECTION 5.2.

MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH,  
CUT ID HOLE USING 1/4" GASKET PUNCH

MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH,  
CUT ID HOLE USING 5/16" GASKET PUNCH

DIMENSION VALUE HAS FINISH COATING OF 6-10 MIL (.006-.010) TAKEN INTO  
CONSIDERATION

8. ADD ADDITIONAL WASHER UNDERNEATH CASTLE NUTS IF NECESSARY.

9. FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III CLASS 2, COLOR BLACK.

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER

NO. 154272 MJS

16-12-07

## SHEET 1, NOTES IS:

DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUC ☐ ICA ☐ BOM

CHANGE CATEGORY  
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED  
☐ YES ☒ NO



# APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04286

SHEET 1 OF 1

DWG NO. 644.4100

REV: F

PREPARED BY J. SOTO

DATE: 12/04/2013

EFFECT ON DWG

☐ INC. ☒ UNINC.

DWG TITLE: PIVOT STEP ASSY

APPROVED BY:

ENGR

*[Signature]*

MFG

*[Signature]*

QC

*[Signature]*

EFF.

NEXT ORDER

TRANSACTION CODES (TC):

A-ADD  
R-REVISE

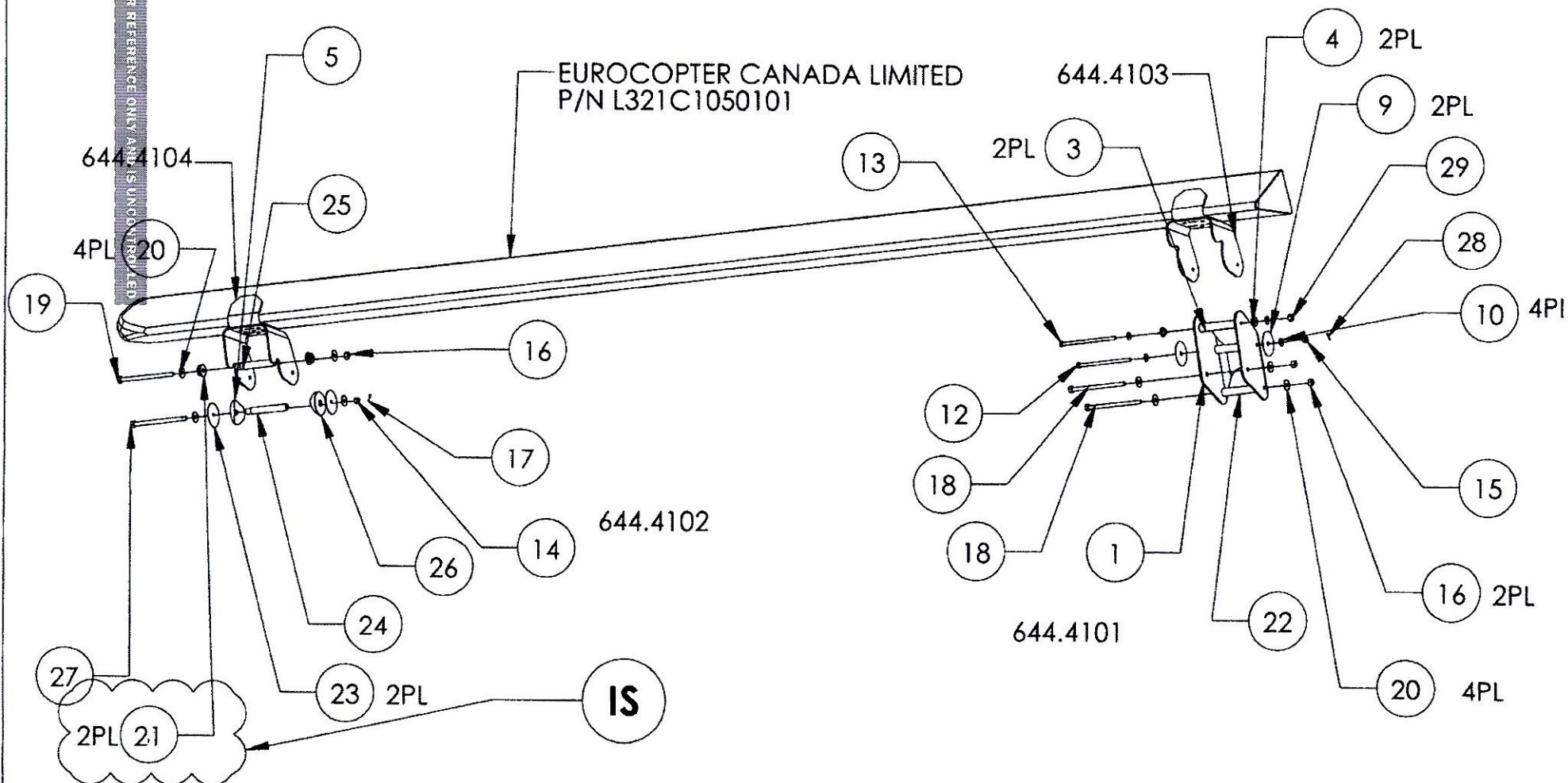
C-CREATE  
D-DELETE

REASON: REVISED F/N CALL OUT FROM 22 TO 21

ECR:

13-151

## SHEET 1, ZONE D1 IS:



DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY

☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED

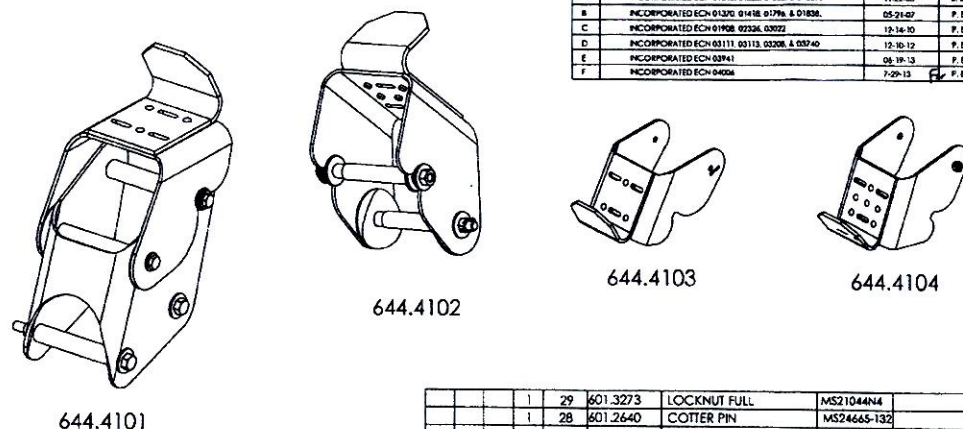
☐ YES ☒ NO



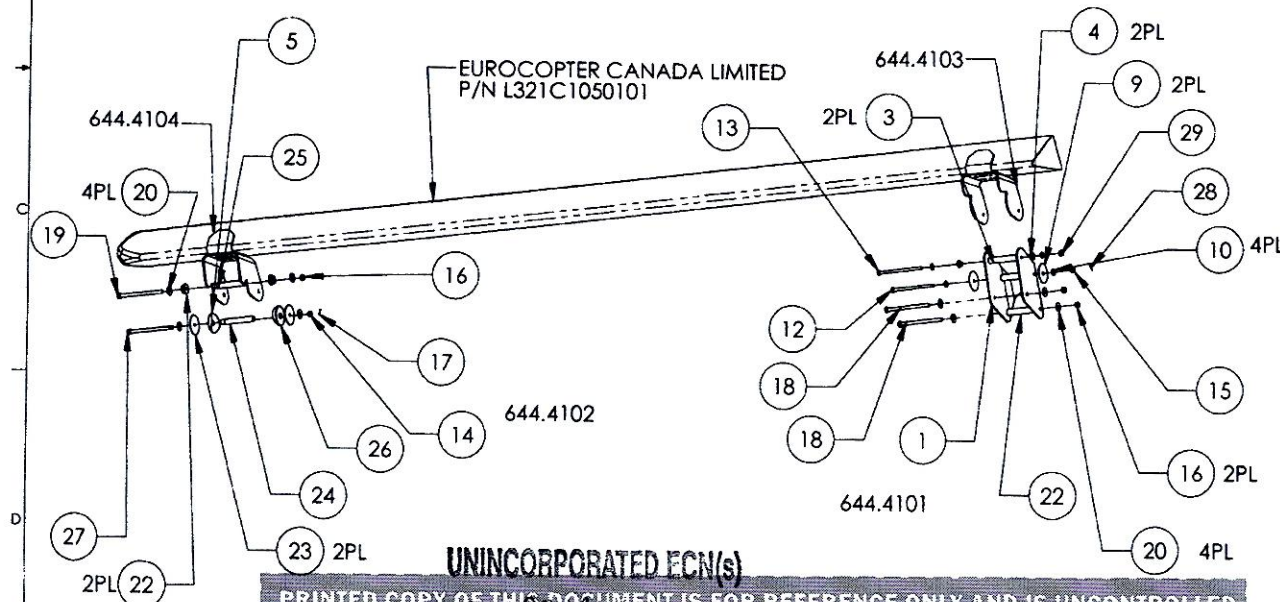
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# NOTES:

1. IDENTIFY ALL PARTS IN ACCORDANCE WITH MPP-120
- 2 MATERIAL: 2024-T3 ALUMINUM
- 3 MATERIAL: 6061-T6 ALUMINUM
- 4 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III CLASS 2, COLOR BLACK; PRETREAT PR-148 ADHESION PROMOTER, PRIME WITH DESOTO 515X349 IAW BMS 10-79 TYPE III CLASS A GRADE A, POLYURETHANE PAINT CARDINAL 6409-RD03-S WITH CATALYST 340HP.
- 5 MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH, CUT ID HOLE USING 1/4" GASKET PUNCH
- 6 MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH, CUT ID HOLE USING 5/16" GASKET PUNCH
- 7 DIMENSION VALUE HAS FINISH COATING OF 6-10 MIL (.006-.010) TAKEN INTO CONSIDERATION
8. ADD ADDITIONAL WASHER UNDERNEATH CASTLE NUTS IF NECESSARY.
- 9 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III CLASS 2, COLOR BLACK.

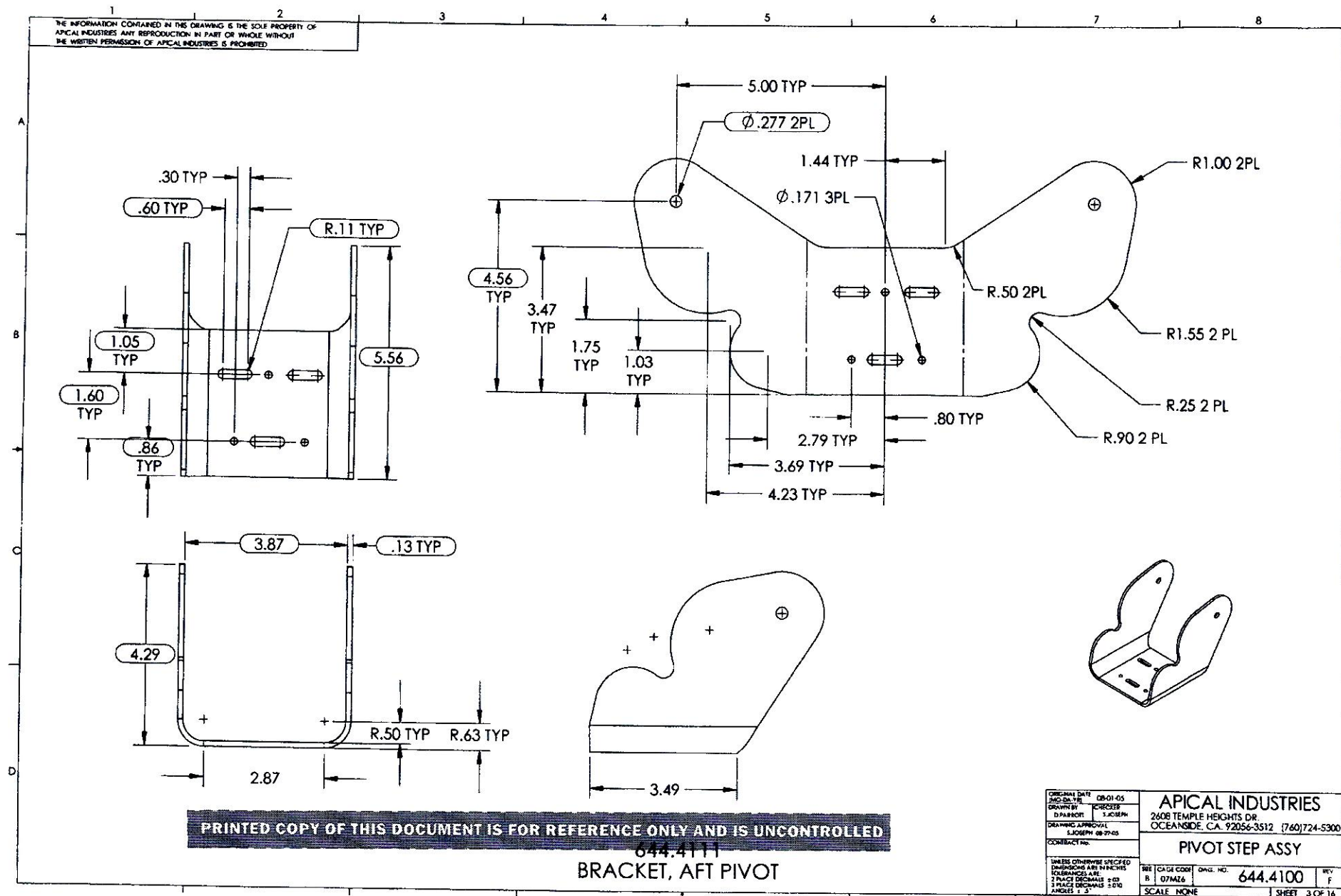


| REV. | DESCRIPTION                                   | DATE     | APPROVED  |
|------|-----------------------------------------------|----------|-----------|
| A    | INCORPORATED ECH 01370, 01322, 01332 & 01337  | 11-29-05 | S. JOSEPH |
| B    | INCORPORATED ECH 01370, 01418, 01796 & 01838  | 05-24-07 | P. BRAVO  |
| C    | INCORPORATED ECH 01908, 02326, 03072          | 12-14-10 | P. BRAVO  |
| D    | INCORPORATED ECH 03111, 03113, 03208, & 03740 | 12-10-12 | P. BRAVO  |
| E    | INCORPORATED ECH 03741                        | 06-19-13 | P. BRAVO  |
| F    | INCORPORATED ECH 04004                        | 7-29-13  | P. BRAVO  |





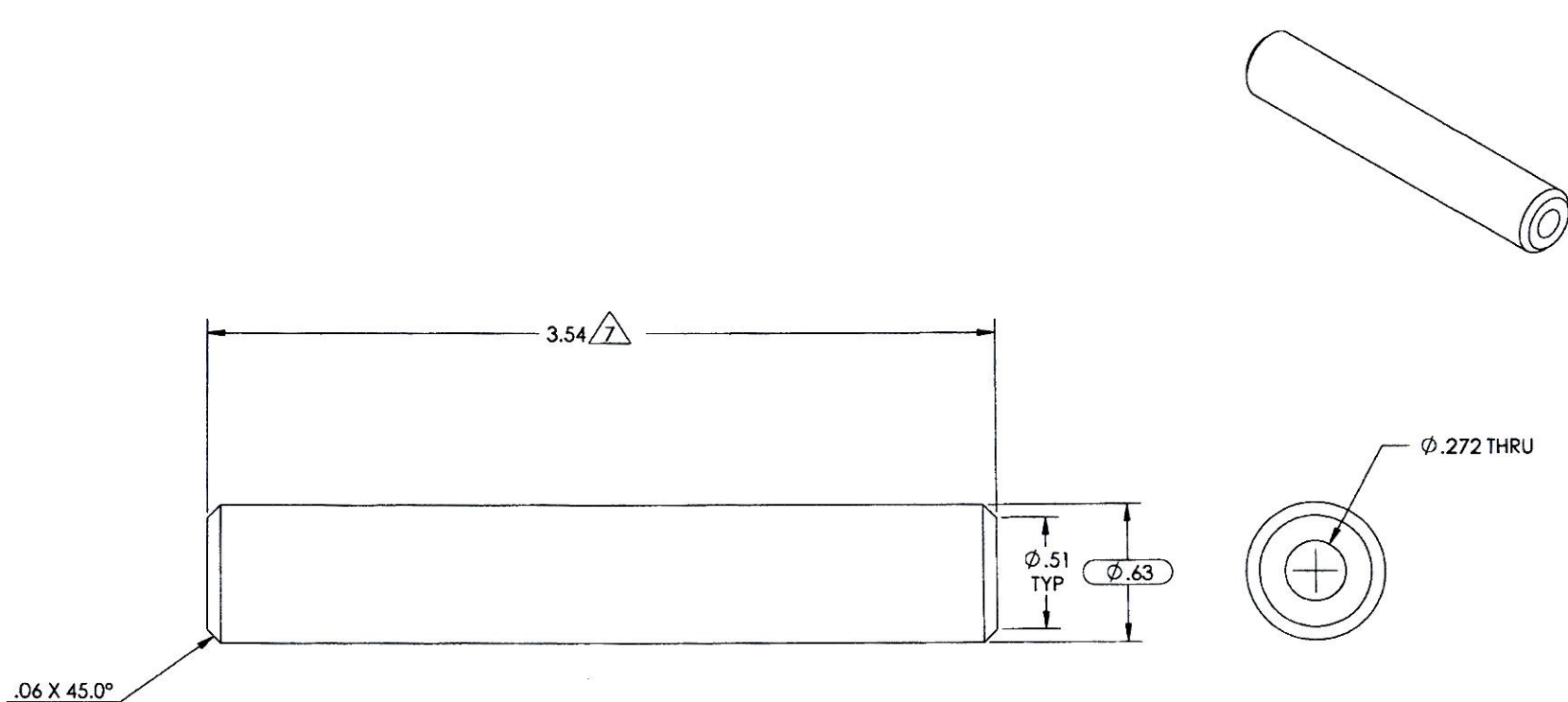
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|                                                                                                                                     |  |                                         |          |
|-------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|----------|
| ORIGINAL DATE: 08-01-05                                                                                                             |  | APICAL INDUSTRIES                       |          |
| DRAWN BY: S. JOSEPH                                                                                                                 |  | 2608 TEMPLE HEIGHTS DR.                 |          |
| CHECKED BY: S. JOSEPH                                                                                                               |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |          |
| DRAWING APPROVAL: S. JOSEPH 08-29-05                                                                                                |  | PIVOT STEP ASSY                         |          |
| CONTRACT NO.                                                                                                                        |  | SCALE: NONE                             |          |
| UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ARE: 2 PLACE DECIMALS ± .03, 3 PLACE DECIMALS ± .010, ANGLES ± .5° |  | REV: 07/02/06                           | 644.4100 |
|                                                                                                                                     |  | SHEET                                   | 3 OF 14  |



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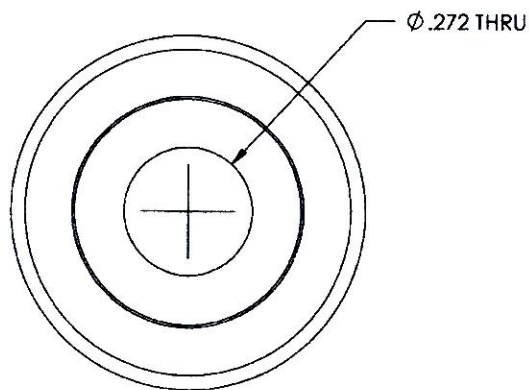
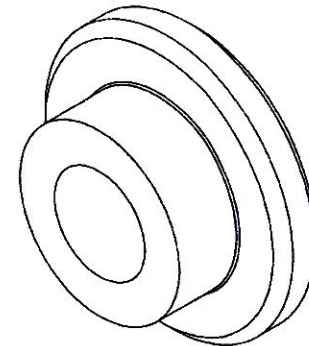
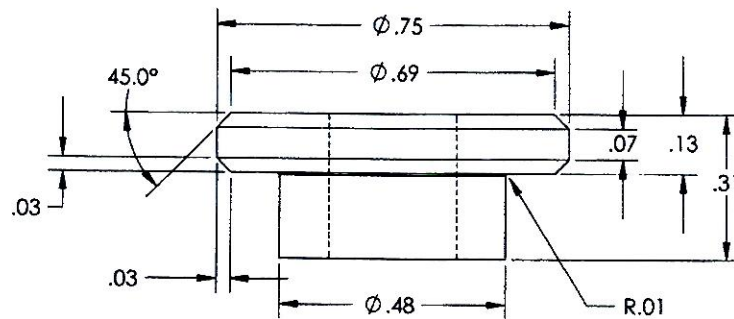
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SPACER

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|                                                                                                                                                 |  |                                          |                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------|-------------------|
| ORIGINAL DATE: 08-01-05                                                                                                                         |  | APICAL INDUSTRIES                        |                   |
| DRAWN BY: D. PARROTT                                                                                                                            |  | 2608 TEMPLE HEIGHTS DR.                  |                   |
| CHECKED BY: S. JOSEPH                                                                                                                           |  | OCEANSIDE, CA. 92056-3512 (760) 724-5300 |                   |
| DRAWING APPROVAL: S. JOSEPH 08-29-05                                                                                                            |  | PIVOT STEP ASSY                          |                   |
| CONF. RACI: N/A                                                                                                                                 |  | REV. F                                   |                   |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS: ±.010<br>3 PLACE DECIMALS: ±.005<br>ANGLES: ±.5° |  | SHEET: 07/02/06                          | DWG. NO. 644.4100 |
| SCALE: NONE                                                                                                                                     |  | SHEET 4 OF 16                            |                   |

1 2 3 4 5 6 7 8

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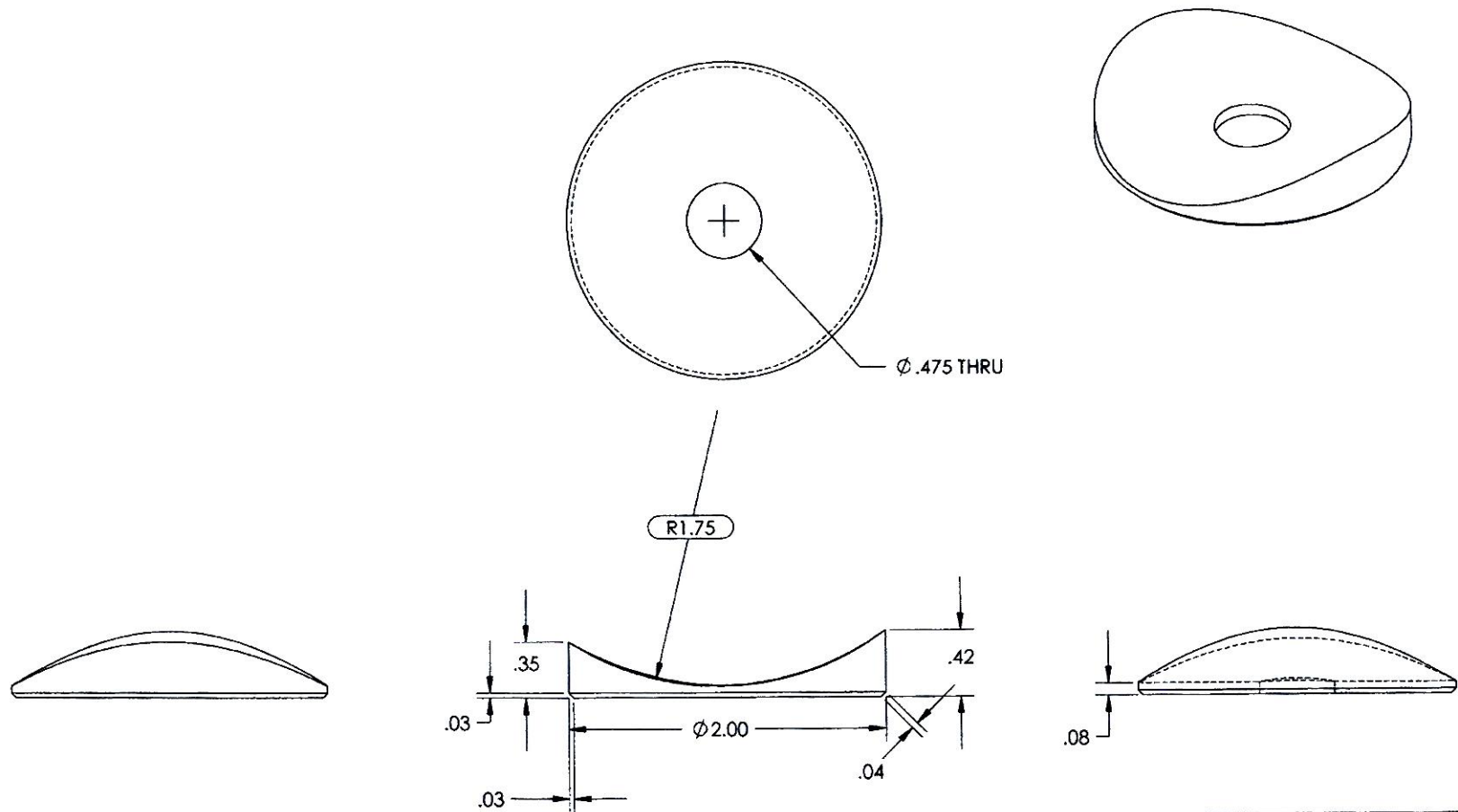


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|                                                                                                                                                                 |  |                                         |                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|-------------------|
| ORIGINAL DATE 08-01-05                                                                                                                                          |  | APICAL INDUSTRIES                       |                   |
| DRAWN BY S.JOSHI                                                                                                                                                |  | 2608 TEMPLE HEIGHTS DR.                 |                   |
| DRAWING APPROVAL S.JOSHI 08-21-05                                                                                                                               |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |                   |
| CONTRACT NO.                                                                                                                                                    |  | PIVOT STEP ASSY                         |                   |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS $\pm .03$<br>3 PLACE DECIMALS $\pm .010$<br>ANGLES $\pm .5^\circ$ |  | SER B CACH CODE 07M26                   | DWG. NO. 644.4100 |
| SCALE NONE                                                                                                                                                      |  | REV F                                   | SHEET 5 OF 16     |

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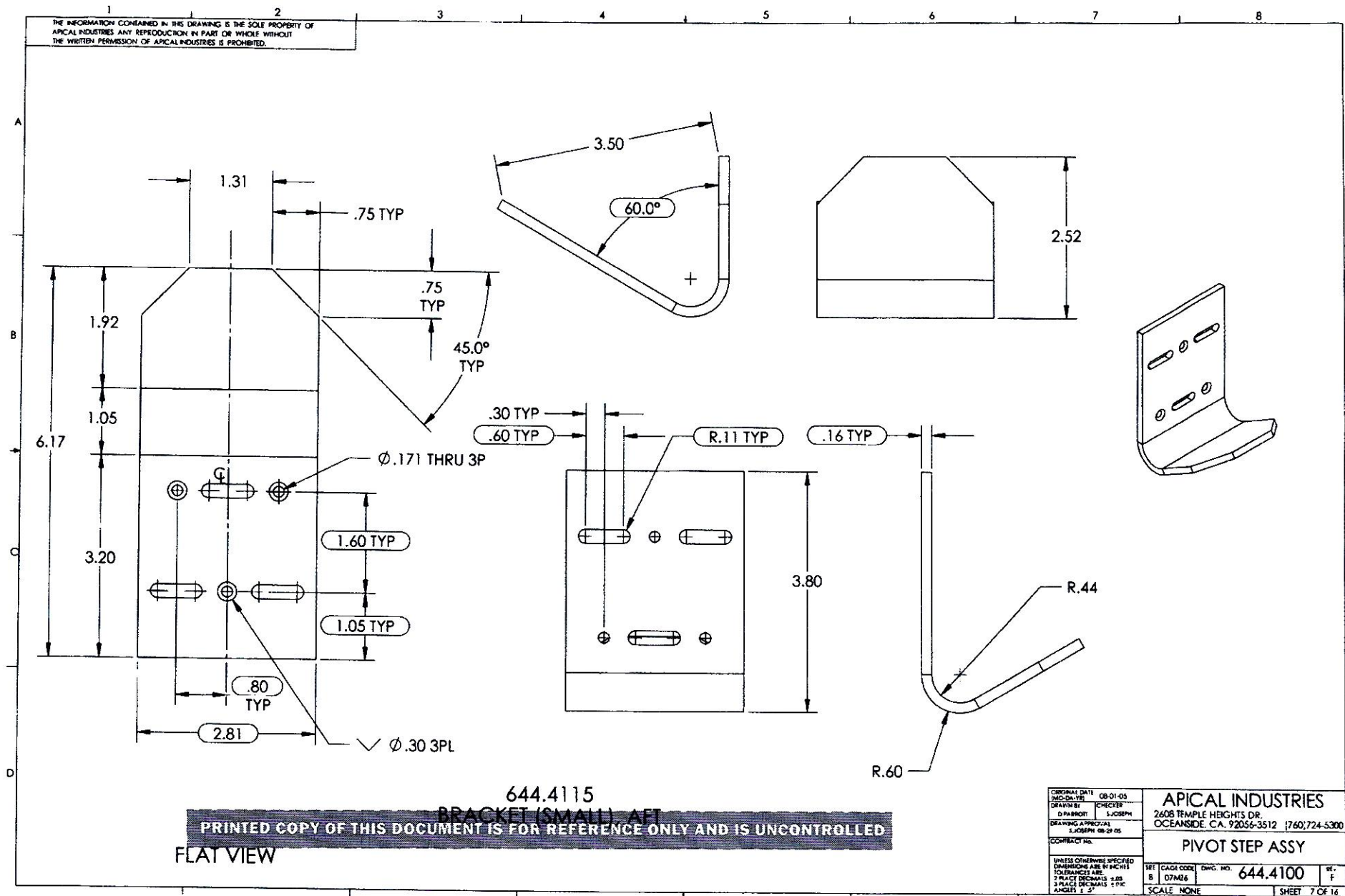


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|                                                                                                                             |  |                                          |                   |
|-----------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------|-------------------|
| ORIGINAL DATE 08-01-05                                                                                                      |  | APICAL INDUSTRIES                        |                   |
| DRAWN BY D. PARROTT                                                                                                         |  | 2608 TEMPLE HEIGHTS DR.                  |                   |
| CHECKED BY S. JOSEPH                                                                                                        |  | OCEANSIDE, CA. 92056-3512 (760) 724-5300 |                   |
| DRAWING APPROVAL S. JOSEPH 08-24-05                                                                                         |  | PIVOT STEP ASSY                          |                   |
| CONTRACT NO.                                                                                                                |  | SIZE CAT# CODE B 07/M26                  | DWG. NO. 644.4100 |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE 2 PLACE DECIMALS 1.00 3 PLACE DECIMALS 1.010 ANGLES 1.5° |  | SCALE NONE                               | SHEET 6 OF 16     |



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A  
B  
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D

644.4116  
BRACKET (SMALL) FWD

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1.31  
45.0° TYP  
1.31  
.75 TYP  
2.44  
6.17  
3.73  
2.81  
.80 TYP  
1.05 TYP  
Ø.171 6 PL  
Ø.30 6 PL  
.60 TYP  
.30 TYP  
R.11 TYP  
.16 TYP  
3.80  
R.44  
R.60  
3.50  
60.0°  
2.52  
R.60

ORIGINAL DATE: 08-01-05  
DRAWN BY: J. JOSEPH  
CHECKED BY: J. JOSEPH  
DRAWING APPROVAL: J. JOSEPH  
CONTRACT NO.:  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ARE:  
3 PLACE DECIMALS: ±.005  
ANGLES: ±.5°

APICAL INDUSTRIES  
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5312  
PIVOT STEP ASSY  
SCALE: NONE  
SHEET 8 OF 8

BRACKET (SMALL), FWD

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|                                                                                                                                              |                   |                                         |          |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------|----------|
| ORIGINAL DATE<br>(MO-DA-YR)                                                                                                                  | 08-01-05          | <b>APICAL INDUSTRIES</b>                |          |
| DRAWN BY                                                                                                                                     | 03/08/05          | 2608 TEMPLE HEIGHTS DR.                 |          |
| CHECKED BY                                                                                                                                   | S JOSEPH          | OCEANSIDE, CA. 92056-3512 (760)724-5300 |          |
| DRAWING APPROVAL                                                                                                                             | S JOSEPH 08-29-05 | <b>PIVOT STEP ASSY</b>                  |          |
| CONTRACT NO.                                                                                                                                 |                   |                                         |          |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>1. HOLE DIMENSIONS .003<br>2. PLATE DIMENSIONS .010<br>AND .005 |                   | SIZE                                    | QTY. NO. |
|                                                                                                                                              |                   | SCALE                                   | REV.     |
|                                                                                                                                              |                   | 07/26/06                                | 644.4100 |
|                                                                                                                                              |                   | SHEET                                   | 8 OF 16  |

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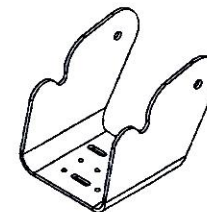
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BRACKET, FWD PIVOT

|                                                                                                                                             |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| ORIGINAL DATE<br>10-01-05                                                                                                                   | DESIGNED BY<br>S. JOSEPH |
| DRAWN BY<br>S. JOSEPH                                                                                                                       | CHECKED BY<br>S. JOSEPH  |
| DRAWING APPROVAL<br>S. JOSEPH 08-29-05                                                                                                      | CONTRACT NO.             |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.03<br>3 PLACE DECIMALS ±.010<br>ANGLES ±.5° |                          |
| SIZE<br>B                                                                                                                                   | CAGE CODE<br>07NM26      |
| DWG. NO.<br>644.4100                                                                                                                        |                          |
| REV.<br>F                                                                                                                                   |                          |
| SCALE<br>NONE                                                                                                                               |                          |
| SHEET<br>9 OF 16                                                                                                                            |                          |

APICAL INDUSTRIES  
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300

PIVOT STEP ASSY



|                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ORIGINAL DATE<br>(MO-DA-YR)<br>08-01-05<br>DRAWN BY<br>J. JOSEPH<br>CHECKED BY<br>J. JOSEPH<br>DRAWING APPROVAL<br>J. JOSEPH 08-29-05<br>CONTRACT NO.<br><br>UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>DIMENSIONS ARE TO FACE<br>2 PLACES DECIMALS = .00<br>3 PLACES DECIMALS = .000<br>ANGLES = ° | <b>APICAL INDUSTRIES</b><br>2608 TEMPLE HEIGHTS DR<br>CANNONDALE, CA 92056-3512 (760)724-5308<br><br><b>PIVOT STEP ASSY</b><br><br>SHT. B CASE CODE DWG. NO. REV. F<br>07246 644.4100<br>SCALE NONE SHEET 9 OF 16 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



1 2 3 4 5 6 7 8

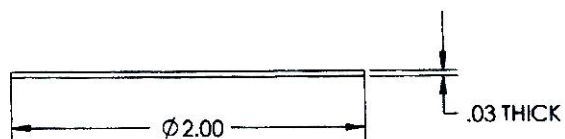
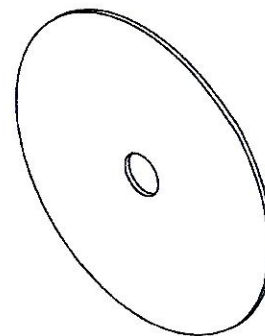
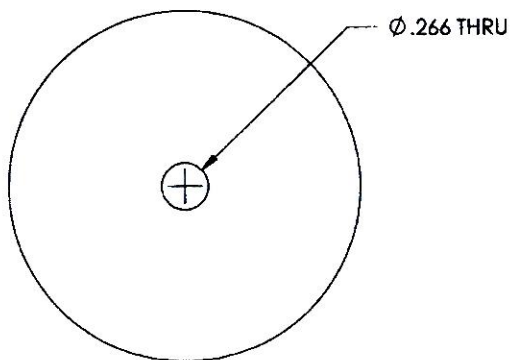
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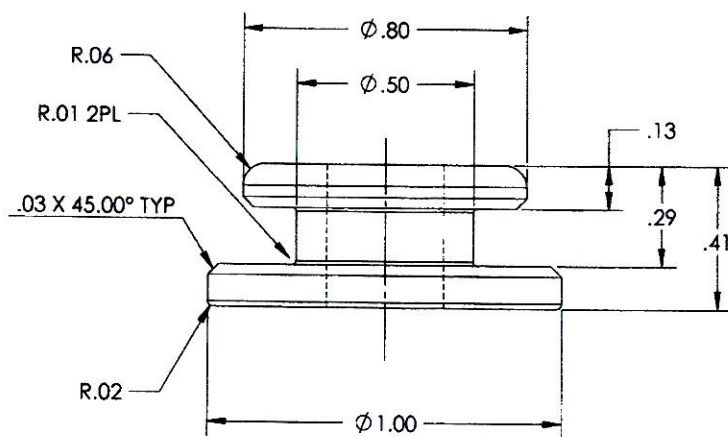
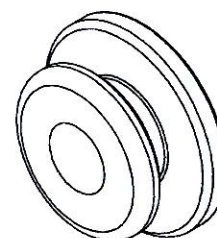
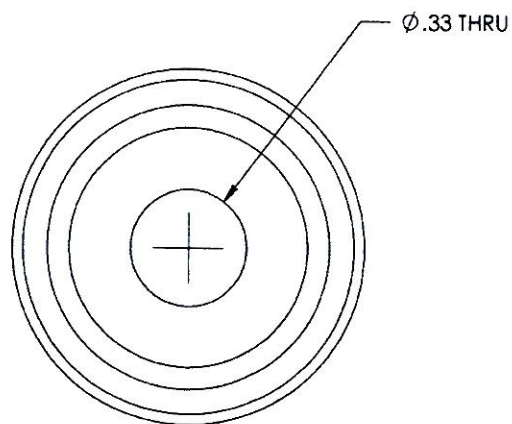


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WASHER, NYLON

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|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------|
| ORIGINAL DATE<br>08-01-05                                                                                                                    | APICAL INDUSTRIES          |                                                                    |
| DRAWN BY<br>D. HARRIS                                                                                                                        | CHECKED<br>S. JOSEPH       | 2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300 |
| DRAWING APPROVAL<br>S. JOSEPH 08-29-05                                                                                                       | PIVOT STEP ASSY            |                                                                    |
| CONTRACT NO.                                                                                                                                 | SER. CAGE CODE<br>B 07MA26 | DWG. NO.<br>644.4100                                               |
| UNLESS OTHERWISE SPECIFIED:<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.03<br>3 PLACE DECIMALS ±.010<br>ANGLES ±.5° | SCALE<br>NONE              | SHEET<br>10 OF 16                                                  |

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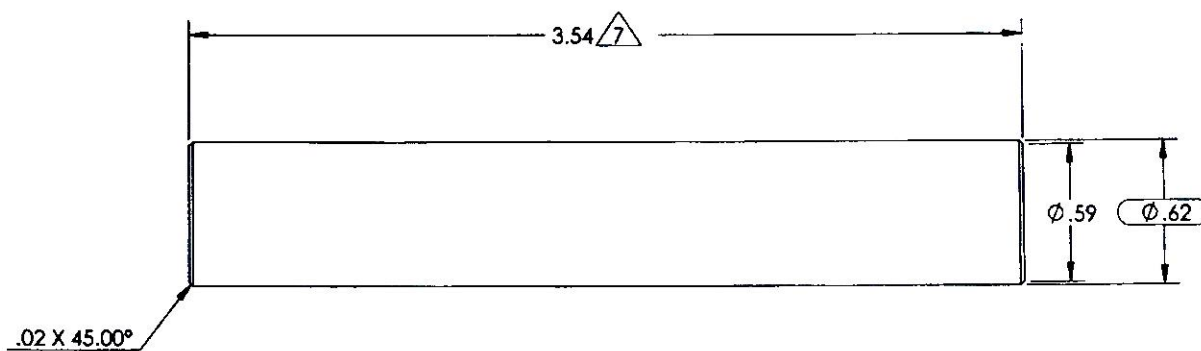
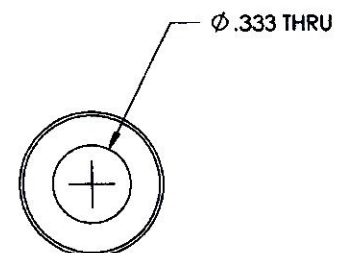
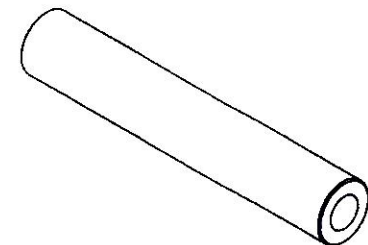


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|---------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|-----------------|
| ORIGINAL DATE 08-01-05                                                                                                                      |  | APICAL INDUSTRIES                       |                 |
| DRAWN BY: J. JOSEPH                                                                                                                         |  | 2608 TEMPLE HEIGHTS DR.                 |                 |
| CHECKED BY: J. JOSEPH                                                                                                                       |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |                 |
| DRAWING APPROVAL: J. JOSEPH 08-24-05                                                                                                        |  | PIVOT STEP ASSY                         |                 |
| CONTRACT NO.                                                                                                                                |  | REV. F                                  |                 |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.00<br>3 PLACE DECIMALS ±.005<br>ANGLES ±.5° |  | REV. B                                  | CAGE CODE 07M26 |
| SCALE NONE                                                                                                                                  |  | DWG. NO. 644.4100                       | SHEET 1 OF 16   |

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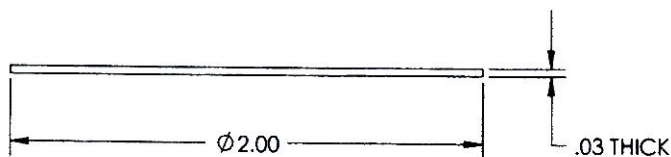
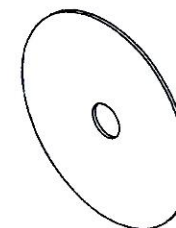
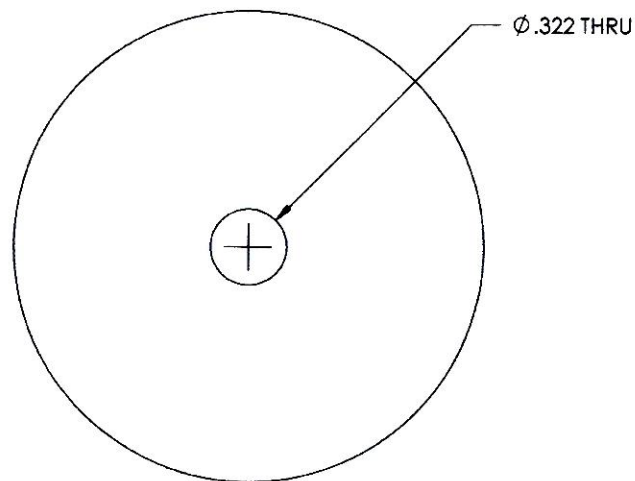
644.4120  
SPACER, CROSS-TUBE

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|------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------|------------------|
| ORIGINAL DATE 08-01-05                                                                                                                         |  | APICAL INDUSTRIES                        |                  |
| DRAWN BY D. PARSONS                                                                                                                            |  | 2608 TEMPLE HEIGHTS DR.                  |                  |
| DRAWING APPROVED BY J. JOSEPH                                                                                                                  |  | OCEANSIDE, CA. 92056-3512 (760) 724-5300 |                  |
| CONTRACT NO.                                                                                                                                   |  | PIVOT STEP ASSY                          |                  |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ± .02<br>3 PLACE DECIMALS ± .010<br>ANGLES ± .5° |  | SERIAL CODE B                            | DWG NO. 644.4100 |
| SCALE NONE                                                                                                                                     |  | SHEET 12 OF 14                           |                  |



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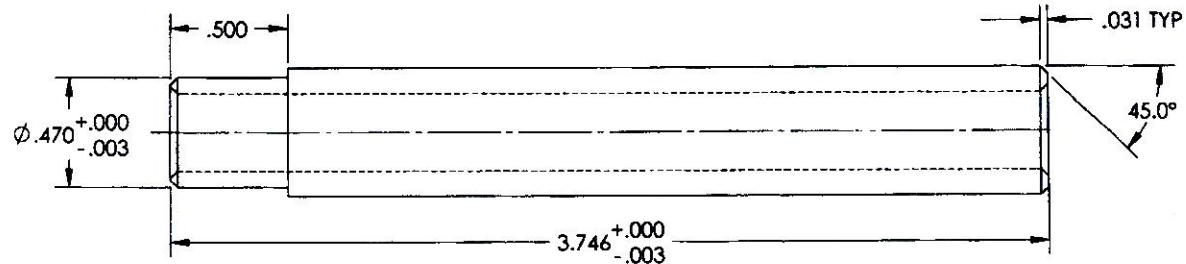
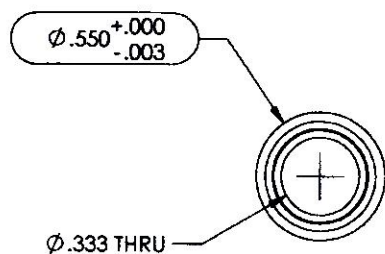
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|-----------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|------------------|
| ORIGINAL DATE 09-01-05                                                                                                            |  | APICAL INDUSTRIES                       |                  |
| DRAWN BY: D. J. HART                                                                                                              |  | 2608 TEMPLE HEIGHTS DR.                 |                  |
| CHECKED BY: S. JOSEPH                                                                                                             |  | OCEANSIDE, CA 92056-3512 (760) 724-5300 |                  |
| DRAWING APPROVAL: S. JOSEPH 08-29-03                                                                                              |  | PIVOT STEP ASSY                         |                  |
| CONTRACT NO.                                                                                                                      |  | REV. F                                  |                  |
| UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ARE: 1 PLACE DECIMALS ±.005, 2 PLACE DECIMALS ±.001, ANGLES ±.5° |  | SIZE: B                                 | CAGE CODE: 07M26 |
|                                                                                                                                   |  | DWG. NO: 644.4100                       | SHEET: 13 OF 16  |
|                                                                                                                                   |  | SCALE: NONE                             |                  |

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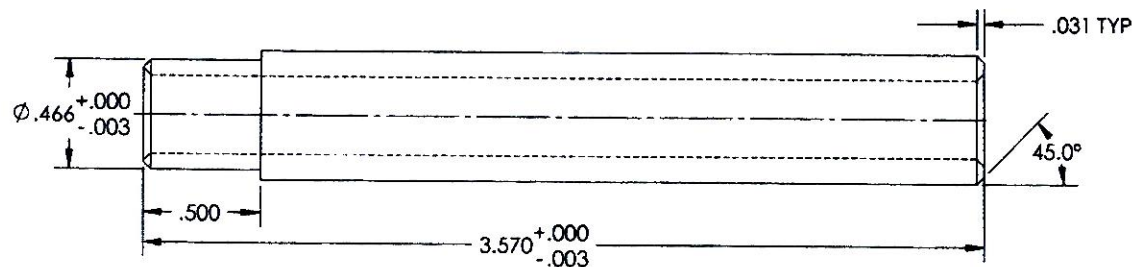
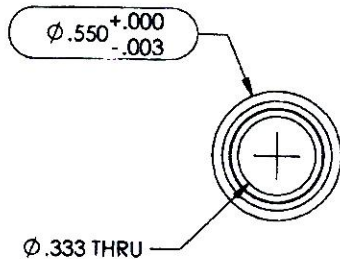


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|--------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|----------------------------|
| ORIGINAL DATE 08-01-05                                                                                                         |  | APICAL INDUSTRIES                       |                            |
| DRAWN BY D. JOSEPH                                                                                                             |  | 2608 TEMPLE HEIGHTS DR.                 |                            |
| CHECKED BY J. JOSEPH                                                                                                           |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |                            |
| DRAWING APPROVAL J. JOSEPH 08-24-05                                                                                            |  | PIVOT STEP ASSY                         |                            |
| CONTRACT NO.                                                                                                                   |  | REV. 1                                  |                            |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS 1.010 3 PLACE DECIMALS 1.010 ANGLES ± .5° |  | SIZE CASE CODE DWD. NO. 644.4100        | SCALE: NONE SHEET 14 OF 14 |

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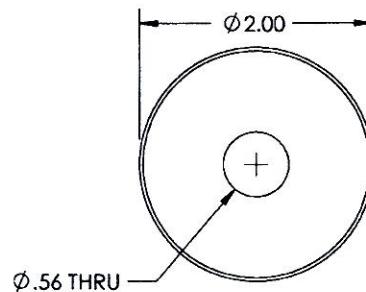
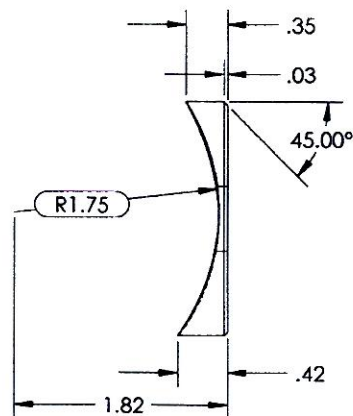


644.4123

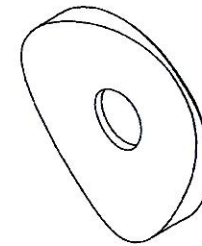
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|                                                                                                                                                 |  |                                                                    |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------|--------------------|
| ORIGINAL DATE<br>08-01-05                                                                                                                       |  | APICAL INDUSTRIES                                                  |                    |
| DRAWN BY<br>D. PARICOTT                                                                                                                         |  | 2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300 |                    |
| DRAWING APPROVAL<br>J. JOSEPH 08-29-05                                                                                                          |  | PIVOT STEP ASSY                                                    |                    |
| CONTRACT NO.                                                                                                                                    |  | REV                                                                |                    |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>3 PLACE DECIMALS ± .003<br>2 PLACE DECIMALS ± .010<br>ANGLES ± .1° |  | SER<br>B                                                           | CAGE CODE<br>07M26 |
|                                                                                                                                                 |  | DWG. NO.<br>644.4100                                               | REV<br>F           |
|                                                                                                                                                 |  | SCALE: NONE                                                        | SHEET 15 OF 16     |

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644.4124



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|                                                                                                                                             |  |                                         |               |
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| ORIGINAL DATE: 08-01-05                                                                                                                     |  | APICAL INDUSTRIES                       |               |
| DRAWN BY: STANBORN                                                                                                                          |  | 2608 TEMPLE HEIGHTS DR.                 |               |
| CHECKED BY: J. JOSEPH                                                                                                                       |  | OCEANSIDE, CA. 92056-3512 (760)724-5300 |               |
| DRAWING APPROVAL: J. JOSEPH 08-29-05                                                                                                        |  | PIVOT STEP ASSY                         |               |
| CONTRACT NO.                                                                                                                                |  | REV: F                                  |               |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.00<br>3 PLACE DECIMALS ±.010<br>ANGLES ±.5° |  | SIZE: B                                 | QTY: 644.4100 |
| SCALE: NONE                                                                                                                                 |  | SHEET 16 OF 16                          |               |







A.T.G. INDUSTRIES INC.  
731 INDUSTRIELLE STREET  
ROCKLAND, ON K4K 1T2  
Canada

Ph: (613) 446-4544

Fax: (613) 446-4556

### Pack List

Number: 912727

Date: 20-Dec-16

To

Dart Aerospace Ltd  
1270 Aberdeen St  
Hawkesbury, ON K6A 1K7

Ship To

CHANTAL LAVOIE  
Dart Aerospace Ltd  
1270 Aberdeen St  
Hawkesbury, ON K6A 1K7

Ph: 613 632-9577

Fax: 613 632-1053

Ph: 613 632-9577

Fax: 613 632-1053

| Terms    |                                                                                                                                            | Ship Via                |  |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|
|          |                                                                                                                                            |                         |  |
| Quantity | Description                                                                                                                                |                         |  |
|          | PLEASE REFERENCE THE PACK LIST NUMBER ON ALL CORRESPONDENCE TO THIS SHIPMENT.<br>IF YOU HAVE ANY QUESTIONS, PLEASE CALL AT (613) 446-4544. |                         |  |
| 7<br>ea  | Part: 644.4122<br>Bushing<br>Hard Black Anodize per MIL-A-8625F, Type III, Class 2<br>Job: 20512                                           | Rev: F2<br><br>Line: 11 |  |
| 7<br>ea  | Part: 644.4120<br>Spacer<br>Hard Black Anodize per MIL-A-8625F, Type III, Class 2<br>Job: 20513                                            | Rev: F2<br><br>Line: 12 |  |
| 14<br>ea | Part: 644.4119<br>Spacer<br>Hard Black Anodize per MIL-A-8625F, Type III, Class 2<br>Job: 20514                                            | Rev: F2<br><br>Line: 13 |  |
| 14<br>ea | Part: 644.4113<br>Spacer<br>Hard Black Anodize per MIL-A-8625F, Type III, Class 2<br>Job: 20515                                            | Rev: F2<br><br>Line: 14 |  |
| 14<br>ea | Part: 644.4112<br>Spacer<br>Hard Black Anodize per MIL-A-8625F, Type III, Class 2<br>Job: 20516                                            | Rev: F2<br><br>Line: 15 |  |
| 50<br>ea | Part: D1038-58B<br>Rail<br>Black Anodize per MIL-A-8625F, Type II, Class 2<br>Job: 20517                                                   | Rev: B<br><br>Line: 16  |  |
| 2        | Part: D5046-041                                                                                                                            | Rev: B                  |  |



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Hawkesbury, ON K6A 1K7

Ph: 613 632-9577

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Ph: 613 632-9577

Fax: 613 632-1053

| Terms                                                                                                                                                                                              |                                                                                       | Ship Via |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------|--|
| Quantity                                                                                                                                                                                           | Description                                                                           |          |  |
| ea                                                                                                                                                                                                 | Co-pilot<br>Black Anodize per MIL-A-8625F, Type II, Class 2<br>Job: 20518 PO: PO34644 | Line: 17 |  |
| DATE: 20/12/16                                                                                                                                                                                     |                                                                                       |          |  |
| CERTIFIED SIGNATURE: [Signature]                                                                                                                                                                   |                                                                                       |          |  |
| RECEIVER SIGNATURE: [Signature]                                                                                                                                                                    |                                                                                       |          |  |
| Note: This Packing Slip may contain parts that have been PLATED. Items that are plated may be subject to natural tarnishing and it is suggested that they be inspected within 24 hours of receipt. |                                                                                       |          |  |
| CERTIFICATE OF CONFORMANCE                                                                                                                                                                         |                                                                                       |          |  |
| A.T.G. INDUSTRIES INC. CERTIFIES THAT ALL ITEMS IN THIS SHIPMENT CONFORM TO REQUIREMENTS.                                                                                                          |                                                                                       |          |  |
| MADE IN CANADA.                                                                                                                                                                                    |                                                                                       |          |  |